

START

0023045

ENGINEERING CHANGE NOTICE

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1. ECN 169796

Proj.
ECN

2. ECN Category (mark one)		Supplemental <input type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input type="checkbox"/>
Cancel/Void <input type="checkbox"/>		Direct Revision <input checked="" type="checkbox"/>	Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>
3. Originator's Name, Organization, MSIN, and Telephone No. <u>W 81225</u> F. W. Gustafson, Env. Rest. Eng, H4-55, 376-1736				4. Date 7/20/92
5. Project Title/No./Work Order No. <u>P # 131</u> Description of Work for 100 Area Columbia River Sediment Sampling		6. Bldg./Sys./Fac. No. n/a		7. Impact Level 3Q
8. Document Number Affected (include rev. and sheet no.) WHC-SD-EN-AP-097 <u>Rev. C</u>		9. Related ECN No(s). n/a		10. Related PO No. n/a
11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package Doc. No. n/a	11c. Complete Installation Work n/a Cog. Engineer Signature & Date	11d. Complete Restoration (Temp. ECN only) n/a Cog. Engineer Signature & Date	
12. Description of Change <u>Section 1</u> , Added text to better define scope of work <u>Section 3.1</u> , Added ^{text FWB 7/23/92} text to clarify sampling horizons at each location and to include a sampling location reconnaissance prior to collection effort, <u>Section 3.2</u> , Made clarification that Pb and Hg are not analyzed by ICP metal analysis A total-activity analysis was also included on samples after the sieve analysis to determine location of contaminants within a sample, <u>Section 3.3</u> , Changes in text made to ensure consistency with changes indicated above, ^{in FWB 7/23/92}				
13a. Justification (mark one)		Criteria Change <input type="checkbox"/>	Environmental <input checked="" type="checkbox"/>	Facilitate Const. <input type="checkbox"/>
Design Error/Omission <input type="checkbox"/>		Design Improvement <input type="checkbox"/>	As-Found <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>
13b. Justification Details Changes are a result of comment received during DOE and supplemental WHC reviews.				
14. Distribution (include name, MSIN, and no. of copies) See attached			RELEASE STAMP OFFICIAL RELEASE // BY WHC DATE AUG 26 1992 <i>Station #21</i>	

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Page 2 of 2

1. ECN (use no. from pg. 1)

169796

15. Design Verification Required [] Yes [X] No		16. Cost Impact ENGINEERING Additional [] \$ Savings [] \$ CONSTRUCTION Additional [] \$ Savings [] \$				17. Schedule Impact (days) Improvement [] Delay []	
18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.							
SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]		
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]		
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]		
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]		
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]		
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]		
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]		
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]		
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]		
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]		
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]		
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]		
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]		
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]				
Environmental Report	[]	Inspection Plan	[]				
Environmental Permit	[]	Inventory Adjustment Request	[]				
19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.							
Document Number/Revision		Document Number/Revision		Document Number/Revision		Document Number/Revision	
20. Approvals							
Signature		Date		Signature		Date	
OPERATIONS AND ENGINEERING				ARCHITECT-ENGINEER			
Cog./Project Engineer F.W. Gustafson		7/23/92		PE			
Cog./Project Engr. Mgr. R. P. Henckel		7/23/92		QA			
QA G. Corrigan		7-23-92		Safety			
Safety				Design			
Security				Other			
Proj. Prog./Dept. Mgr.							
Def. React. Div.							
Chem. Proc. Div.							
Def. Wst. Mgmt. Div.				DEPARTMENT OF ENERGY			
Adv. React. Dev. Div.							
Proj. Dept.							
Environ. Div.				ADDITIONAL			
IRM Dept.							
Facility Rep. (Ops.)							
Other S. G. Weiss		7/20/92					

SUPPORTING DOCUMENT

1. Total Pages 911

2. Title

DESCRIPTION OF WORK FOR 100 AREA COLUMBIA RIVER
SEDIMENT SAMPLING

3. Number

WHC-SD-EN-AP-097

4. Rev No.

1

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Columbia River, Sediment, Sampling, Description of
Work

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J. Burkland 8/5/92

6. Author

Name: F. W. Gustafson

F. W. Gustafson 7/22/92
Signature

Organization/Charge Code 81225/PH131

7. Abstract

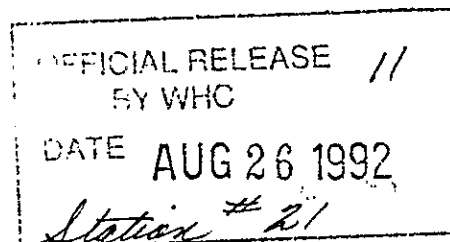
This description of work was developed to investigate the impact to the Columbia River from the Operation of the production reactors in the 100 Areas. Approximately 76 samples will be taken downstream of the effluent pipelines and in areas of substantial sediment deposition.

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10. RELEASE STAMP



9. Impact Level 3Q

921200193

Page 1

DESCRIPTION OF WORK FOR 100 AREA COLUMBIA RIVER SEDIMENT SAMPLING

(6) Cog. Mgr. Date

W. J. Brown 7/23/92

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1.0 SCOPE OF WORK

This document details Columbia River sediment investigation field activities associated with 100 Area Operable Units remedial investigations. The scope of this effort is to determine if radiological contaminants are present in Columbia River sediments as a result of reactor operations. It is not within the scope of this investigation to determine the extent of the contamination. Sampling locations will be chosen based on areas of obvious sediment deposition downriver from outfall pipes and spillways.

This description of work will serve as a field guide for those performing the work. It should be used in conjunction with the remedial investigation/feasibility study work plan for 100 Area Operable Units for general investigation strategy and with *Environmental Investigations and Site Characterization Manual* (WHC 1988a) for specific procedures.

2.0 GENERAL REQUIREMENTS

2.1 APPLICABLE PROCEDURES

All personnel working to this description will perform work in accordance with the following:

- WHC-EP-0383, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan* (WHC 1990)
- WHC-CM-4-10, *Radiation Protection* (WHC 1988b)
- WHC-CM-4-11, *ALARA Program Manual* (WHC 1988c)
- WHC-CM-4-3, *Industrial Safety Manual*, Vols. 1 through 3, (WHC 1987)
- WHC-CM-7-5, *Environmental Compliance Manual* (WHC 1988d)
- Site-specific job safety analysis.

The associated field activities will also conform to the requirements of a site-specific safety assessment to be completed prior to initiation of the field activities. The requirements of this assessment may potentially impact specific sampling protocol. All changes resulting from this assessment will be documented utilizing a Columbia River Sediment Sampling Project Change Form (Attachment 1).

2.2 PREREQUISITES

A readiness review will be completed by the cognizant engineer before sampling is attempted. The readiness review will be completed per EII 1.13, Environmental Engineering and Geotechnology Readiness Review (WHC 1988a). The

Sampling Status Checklist (Attachment 2) will be initialed by the cognizant engineer or field team leader and dated as each step of the task is completed.

3.0 SAMPLING AND FIELD ACTIVITIES

3.1 LOCATION

This description of work addresses the sampling of Columbia River sediments located around outfall structures, within backwater sloughs, and on the downriver side of islands. The extent of the sampling efforts will be limited to river sediments located between B Reactor and the Hanford Town Site.

Exact sampling locations will be chosen during a reconnaissance effort to be conducted prior to initiating the sampling activities. This reconnaissance effort will survey areas where contaminants were likely to settle out (i.e., areas of low velocity and just downstream of the outfall structures). Sample material will consist of silts and sands. Cobble material will be avoided.

Figure 1 identifies 32 potential sampling locations. Locating sediments in the vicinity of the outfall structures is doubtful, as the outfall structures are midstream where river velocity is highest. Potential sampling locations will be at the nearest downstream location from the outfall structures.

Additional samples may be taken at the discretion of the field team leader. Sample numbers may be reduced if the field reconnaissance efforts indicate a lack of adequate sediments. A sediment sample will be taken from surface material (0 to 6 in.) and from a composite of sediments below the 1-ft level if an adequate sediment bed exists. It is assumed (for planning purposes) that two samples, one surface and one subsurface, will be collected from each location.

The brief description of each sampling point will be recorded in the field logbook. A global positioning system survey instrument will be used to obtain the approximate latitude/longitude for each location.

3.2 SAMPLE ANALYSIS

The contaminants of concern for the Columbia River sediments are based upon those identified for the spring sampling effort conducted in the fall of 1991. They include ICP metals, lead, mercury, standard gamma scan radionuclides, gross alpha, gross beta, and ⁹⁰Sr. These contaminants are known to exist in groundwater plumes located near the river as well as contaminants present in the effluent from the reactor river discharge lines.

Short-lived radiological isotopes are not considered by this study due to the time lapse since released into the environment.

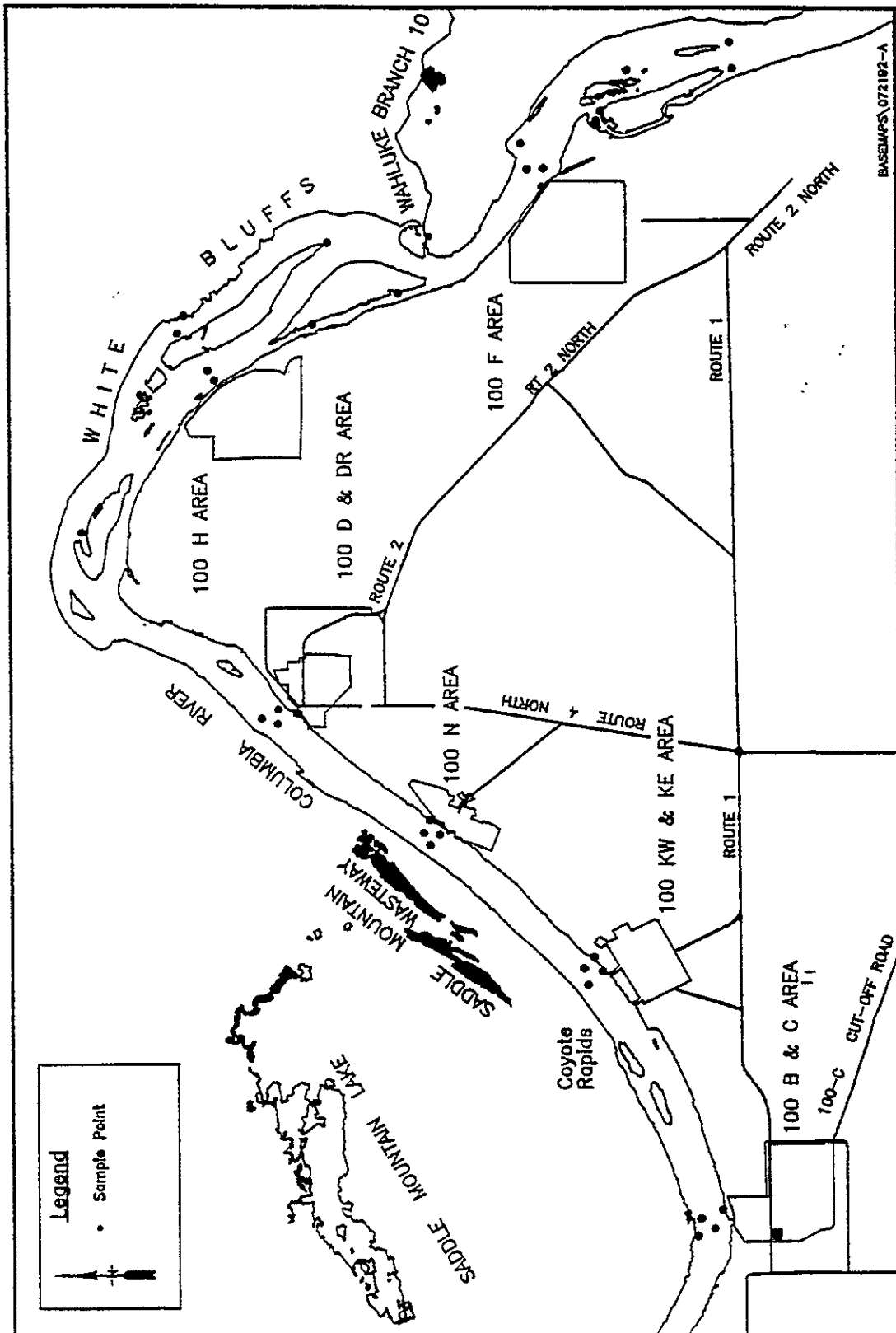


Figure 1. Columbia River Sediment Sampling Locations.

A total activity analysis (required for offsite sample shipment and analysis) will also be performed. A sieve analysis will be performed to separate the fine-grained (> 62 microns) and course-grained fractions. A total activity analysis will be performed on both fractions to determine which portion of the sediments the contamination resides (if notable contamination is located).

3.3 SAMPLE COLLECTION

The river sediment samples will be collected in accordance with the requirements of EII 5.2, Soil and Sediment Sampling (WHC 1988a). Samples will be collected using hand-held coring devices (from either the water surface or with the use of divers). Care will be taken to ensure the fine fraction of the sediments is retained in the sampler. Sampling should be conducted during periods of low flow.

A field logbook will be used to document activities associated with the sample collection. The logbook will be used and maintained per EII 1.5 Field Logbooks (WHC 1988a).

A total of 76 samples will be collected, including quality assurance/quality control (QA/QC) samples. The trip blank and field blank have been deleted per OSWER Directive 9355.0-7B Appendix C, Section C.6 (p.13). The equipment blank media shall be silica sand. The following is a summary of the samples to be collected (Note: the sample numbers below assume two samples will be taken from each location).

- 8 samples below the 100-BC discharge lines and spillways (three discharge lines)
- 8 samples below the 100-K discharge line
- 8 samples below the 100-N discharge line and spillway
- 8 samples below the 100-D/DR discharge line and spillway
- 8 samples below the 100-H discharge line and spillway
- 8 samples below the 100-F discharge line and spillway
- 20 samples from backwater, sediment depositional areas
- 4 equipment blank samples
- 4 duplicate samples
- 4 split samples.

4.0 SAMPLE LABELING

The Hanford Environmental Information System (HEIS) is used to track the sample and laboratory data obtained during environmental investigations conducted under this description of work. Each sample will be identified and labeled with a unique HEIS sample number. HEIS numbers will be assigned in the field per the *Hanford Environmental Information System (HEIS) Operator's Manual* (WHC 1991). The sample location and corresponding HEIS numbers will be documented in the field logbook. Analytical results obtained from this investigation will be loaded into the HEIS.

5.0 ANALYSES

Samples will be analyzed for ICP metals, lead, mercury, standard gamma scan radionuclides, gross alpha, gross beta, ^{90}Sr , and total activity. Estimated quantity of material needed for analyses are shown in Table 1. The laboratory will use existing Level IV methods for the chemical/metal constituents and Level V methods for radionuclides. Sample custody will follow EII 5.1, Chain of Custody (WHC 1988a).

Table 1. Sediment Sample Analysis Requirements.

Analyte	Method	Holding time
ICP/AA metals, mercury, and lead	CLP	6 mo, 28 d, & 14 d
Strontium-90	Lab SOP	6 mo
Gross alpha		
Gross beta		
Gamma spec		
Total Activity (222-S Lab)	Lab SOP	6 mo
Particle Size Distribution		N/A

6.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Internal QA/QC samples shall be collected as specified in Appendix A, Quality Assurance Project Plan (DOE-RL 1992) and documented in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988a). Quality assurance samples will include three equipment blank samples, three duplicate samples, and three split samples. The trip blank and field blank have been deleted per OSWER Directive 9355.0-7B Appendix C, Section C.6 (p.13). The equipment blank media shall be silica sand.

7.0 SCHEDULE

A field implementation date has not yet been established for the Columbia River sediment sampling activities. The months of September and October are recommended dates as river flow is typically at a seasonal low. Approximately 3 weeks will be needed to collect all of the samples identified. The exact schedule will be developed once the necessary resources are obtained. An Agreement Activity Notification form will be issued at least 5 days prior to the start of field work.

8.0 CHANGES TO DESCRIPTION OF WORK

Major changes to this description of work, such as analyzing different parameters or using different analytical methods, will be submitted on the Project Change Form (Attachment 2). As a minimum, the change will require the verbal approval of the field team leader and the operable unit coordinator. The change will be filed as an Engineering Change Notice and a copy will be inserted into the project file. Copies will be submitted to the regulatory agencies and the appropriate field personnel within 10 working days of the change.

9.0 REFERENCES

- DOE-RL, 1992, *Remedial Investigation/Feasibility Study Work Plan for the 100-BC-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL-92-07, U.S. Department of Energy, Richland Field Office, Richland, Washington.
- WHC, 1987, *Industrial Safety Manual*, WHC-CM-4-3, Vol. 1 through 3, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988a, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988b, *Radiation Protection*, WHC-CM-4-10, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988c, *ALARA Program Manual*, WHC-CM-4-11, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988d, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1990, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1991, *Hanford Environmental Information System (HEIS) Operator's Manual*, WHC-SP-0660, Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
COLUMBIA RIVER SEDIMENT
SAMPLING CHECKLIST

Activity Performed	Signature/Date
PREJOB SAFETY MEETING COMPLETED	_____
SAMPLES COLLECTED AND LABELED	_____
SAMPLES SURVEYED BY HPT	_____
SAMPLE PACKAGED IN SHIPPING CONTAINER	_____
TOTAL ACTIVITY SCAN OF SAMPLES COMPLETED	_____
CHAIN OF CUSTODY FORM COMPLETED	_____
SAMPLES SHIPPED TO LABORATORY	_____

921201912

ATTACHMENT 2
COLUMBIA RIVER SEDIMENT SAMPLING PROJECT CHANGE FORM

Date: _____

Person Initiating Change: _____

Change: _____

Reason for Change: _____


APPROVAL:

Field Team Leader: _____

Operable Unit Coordinator: _____

Environmental QA Representative: _____

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Date Received: <i>7/23/92</i>		INFORMATION RELEASE REQUEST		Reference: WHC-CM-3-4	
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			List attachments.		
			Date Release Required <div style="text-align: right;">07/24/92</div>		
Title DESCRIPTION OF WORK FOR 100 AREA COLUMBIA RIVER SEDIMENT SAMPLING				Unclassified Category UC-	
				Impact Level 3Q	
New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).			Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)		
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Title of Journal					
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				Name (printed)	Signature Date
Classification/Unclassified Controlled Nuclear Information	<input type="checkbox"/>	<input checked="" type="checkbox"/>	} <i>SW BERGLIN</i>	<i>Subscribed</i>	<i>7/27/92</i>
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Applied Technology/Export Controlled Information or International Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
WHC Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Communications	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
RL Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Publication Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Steven M. Neale</i>	<i>Steven M. Neale</i>	<i>8/4/92</i>
Other Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
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Responsible Manager (Printed/Signature)					
W. L. Johnson <i>W. L. Johnson</i>					

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Environmental Restoration

Date:
8/20/92

Project Title/Work Order:

Description of Work for 100 Area Columbia River Sediment Sampling

EDT No.:

ECN No.: 169796

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
F.W. Gustafson (5)	H4-55	X		
W.L. Johnson	H4-55	X		
S.G. Weiss	H4-55	X		
R.W. Peterson	H4-56	X		
V.G. Johnson	H5-29	X		
R.E. Day	H4-55	X		
R.P. Henckel	H4-55	X		
A.D. Krug	H4-55	X		
Central files	L8-04	X		
EDMC (2)	H4-22	X		
J. A. Bircher	N2-12			
				+ SD Cover TRR